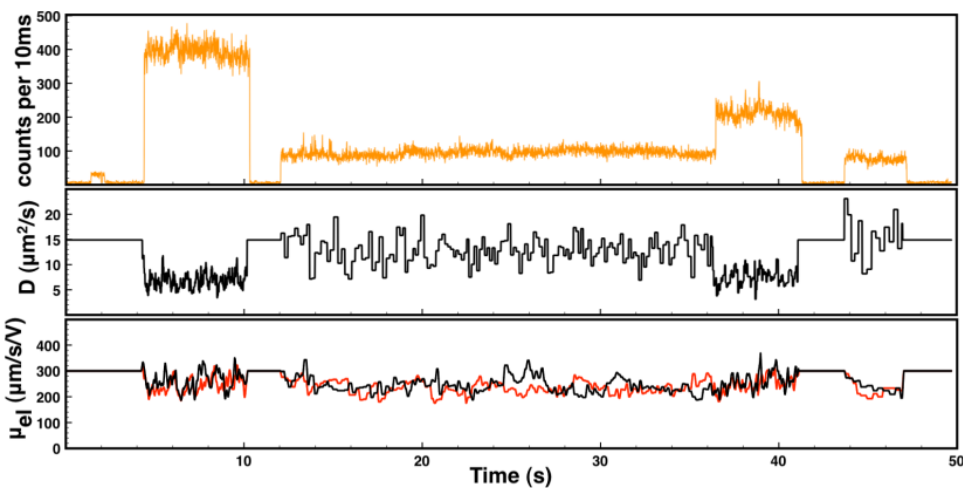
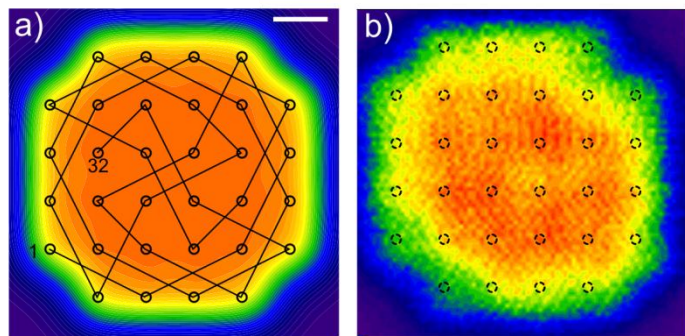


# An Adaptive ABEL Trap with real-time diffusion/mobility estimation

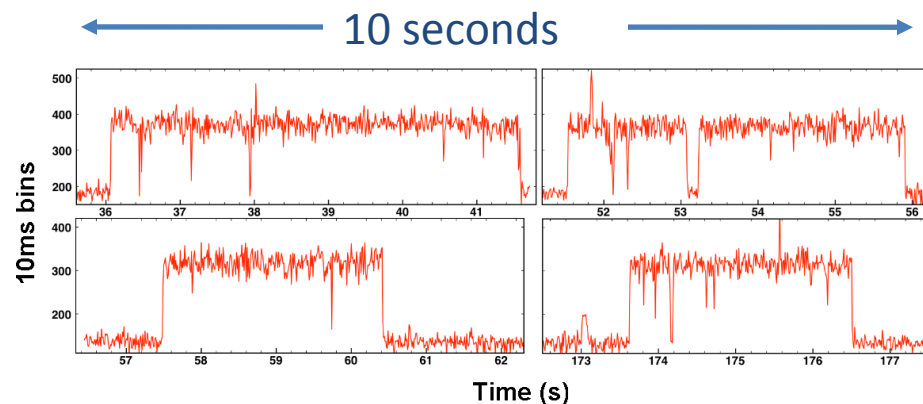
Q.Wang and W.E.Moerner, ACS Nano 5, 5792 (2011)

The Anti-Brownian Electrokinetic Trap (ABEL trap) continues to improve as a tool for localizing nanoscale objects in solution in a region of uniform optical intensity, without surface attachment

- Knight's tour scanning of excitation spot on a 2D grid: much more position information
- Online position tracking by Kalman Filter
- Adaptive trapping enables real-time estimation of diffusion coefficient and mobility



Trapping fluorescent beads with real-time diffusion coefficient and electrokinetic mobility estimation



Trapping single 30T oligonucleotide (MW=9kDa) with a single atto647N fluorescent label!!